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MEMORANDUM

Date: January 29, 2009 F&P submittal incorrectly stated 2008

To: Blair Horst, Sustainability Coordinator

From: Ryan McClain

Subject: ***Task 5: Parking Structure Cost Estimate***

WC08-2572

Fehr & Peers has developed a preliminary construction cost estimate for a parking garage at the existing Blackberry Parking Lot (Lot D). This memorandum summarizes cost data for the structure as well as site constraints and assumptions.

The existing Blackberry Parking Lot is a surface lot that currently has capacity for approximately 120 vehicles. Much of this capacity is used for storage containers and equipment, leaving around 80 usable parking stalls. The lot is located in Blackberry Canyon approximately 70 to 80 feet below Alvarez Road and Cyclotron Road and is accessed via a switchback road off of Alvarez Road. There are also approximately 60 parking stalls provided along this access road. Portable office trailers have been set up at the southern end of the Blackberry Parking lot as well.

The following two options were identified for evaluation:

- A five-level parking structure with an average level size of 38,000 square feet
- An eight-level parking structure with an average level size of 48,000 square feet

For both options, it was assumed that the structure would follow the slopes on the east and south sides of the site, increasing the square footage of each level going up (e.g., the second level would be larger than the first level). For calculation purposes, an average level size is provided and shown in **Figure 1**.

Areas on the north and west sides would be used for construction staging. The footprint could be increased depending on the ability to grade temporary pads for construction equipment such as cranes and concrete pumps. Additionally, construction staging can take place in Lot B located above the construction site.

The parking efficiency of a garage of this size is around 320 square feet per parking stall. This includes the parking stall itself, circulation aisles, vehicle ramps, stairways, elevators and the building structure. Assuming this efficiency, this structure could hold approximately 120 vehicles per level for the five level structure and 150 vehicles for level for the eight level structure.

Based on the elevation of the existing lot, an eight level structure would bring the top level even with Alvarez Road and Lot B. This could allow direct access to the structure from Alvarez Road for vehicles and/or pedestrians via a bridge structure (see **Figure 1**), increasing circulation efficiency over the existing switchback. If less than eight levels are desired, raising the elevation

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of the bottom level through engineered fill to bring the top level even with Alvarez Road may be desirable as it would increase the available footprint size and improve access.

A significant constraint on the construction of a parking structure at this location is the steep surrounding slopes (1.4:1 on the north, south and west sides, 1:1 on the east side). These slopes combined with the small footprint of the existing lot make precast construction difficult as it requires a large crane and direct access to three sides. For this cost estimate, it is assumed that the structure will be cast-in-place.

Based on construction costs of other parking structures in the region, it is estimated that this structure would cost between $26,000 and $30,000 per parking stall[1]. This assumes an above ground structure with typical foundation construction and minimal earthwork. Based on previous studies conducted by the Lab, it was found that Blackberry Canyon is a difficult site for construction of any building over two stories in height. Deep foundations would be required potentially increasing the cost significantly. Boulders encountered during construction of the foundation could lead to additional costs as well. This cost does not include the access bridge described above. Other potential costs include relocation of an existing 8" water line through the site.

For comparison, surface parking lots typically cost from $3,000 to $4,000 per stall and underground parking structure costs are around $50,000 per stall. A comparison between the five level and eight level structure, as well as similar sized surface parking lots is provided in **Table 1**.

Please contact us with any questions or comments.

TABLE 1: PARKING COST COMPARISON

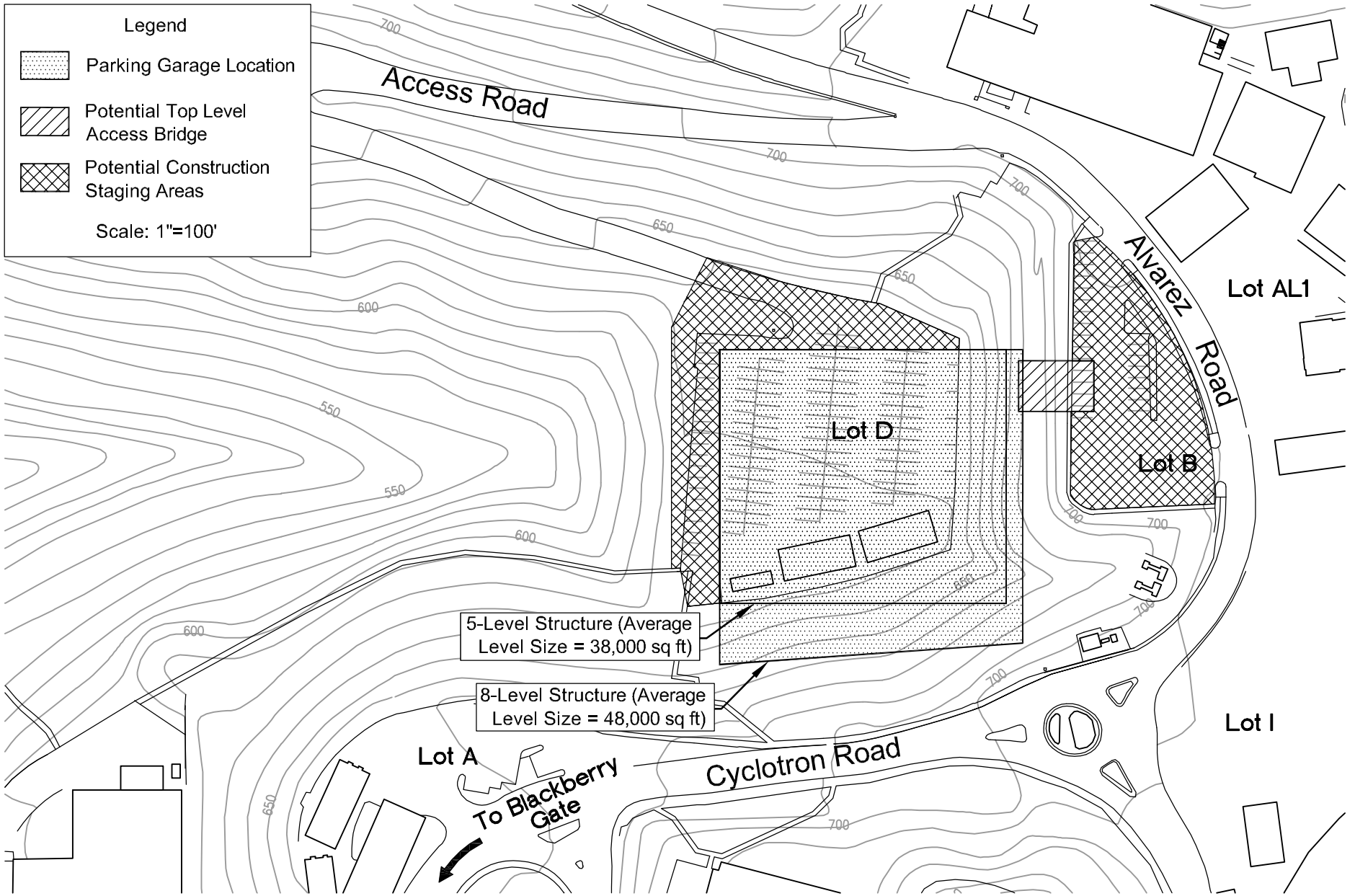
Facility Type	# of Stalls	Average Size of Level (square feet)	Cost per Stall	Total Cost
5-level Structure	600	38,000[1]	$30,000	$18 M
8-level Structure	1,200	48,000[1]	$30,000	$36 M
600 Space Surface Lot for Comparison	600	165,000[2]	$4,000	$2.4 M
1200 Space Surface Lot for Comparison	1,200	330,000[2]	$4,000	$4.8 M

Notes:

1. Average size of all levels, assuming a stepped structure increasing in size in upper levels and an efficiency of 320 square feet per parking stall
2. Surface lot size based on an efficiency of 275 square feet per parking stall for surface lots

Source: Fehr & Peers, 2008.

[1] Costs based on UC Berkeley parking structure project including Parking Structure A Expansion, Wellman Courtyard and Underhill Parking Structure as well as specific review by C. Overaa & Co. Construction



Potential Parking Structure Site

Figure 1

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